ANTARCTIC CRUSTAL RESPONSE PREDICTIONS FROM THE CLIMAP RECONSTRUCTION AND IT'S POSSIBLE SUCCESSORS

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The CLIMAP study of Denton and others, presented *in* the early 1980's. features a continental-scale ice dome over East Antarctica and a much smaller dome in the Antarctic Peninsula at Last Glacial Maximum (LGM). Since that study a variety of new observations relating to the extent and thickness of the Antarctic ice sheet at LGM, as well as the timing of its subsequent partial collapse, have become available. Consequently, an update to the CLIMAP reconstruction presented by Denton, Prentice, and Burckle [1991] (D9 I model) features important changes, including a smaller East Antarctic dome and three domes in West Antarctica. Viscoelastic crustal response predictions (vertical and horizontal crustal motion and secular solid-surface gravity change) arc substantial for both models, reaching values in excess of 5 mm/yr (uplift) over large regions of West Antarctica, for a wide range of plausible choices of mantle viscosity and timing of deglaciation. These large rates are in general agreement with the substantial uplift rates inferred in some recent three-dimmional icc sheet modelling. In detail, the spatial patterns of crustal response diverge by a factor of two or more at some inland sites in West Antarctica. Combining deglaciation scenarios with scenarios, of present day mass change previously developed for secular gravitational harmonic (J_l) studies reveals inland sites where an appropriate multi-year monitoring program could help discriminate between competing scenarios of past and present day Antarctic ice mass balance.